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35. 4,617,218, Oct. 14, 1986, Tightly curled, cut pile, tufted carpet; Roy A. Cadenhead, Sr., 428/92; 28/159; 156/61, 72, 148, 221; 264/230, 345; 273/DIG.13; 428/17, 96 [IMAGE AVAILABLE]

US PAT NO: 4,617,218 [IMAGE AVAILABLE]

L2: 35 of 50

SUMMARY:

BSUM(17)

Preferably the continuous filaments or staple **fibers** will be **crimped**, for example, to the extent of about 10 to 20 crimps per **inch**. Crimping is a process well known in the art. It gives the individual filaments or fibers a saw-toothed appearance. Crimping makes for a bulkier, less slippery yarn--one that more closely approaches the look and characteristics of yarns spun from natural fibers, such as wool. Usually crimping is performed by running continuous filament tow between the intermeshing gears of a **mechanical** crimper, or by passing it through a stuffer box or past a pulsating air jet. The crimp is preferably made latent by stretching the yarn, prior to subjecting it to the first step in my process, that of knitting.

47. 3,940,522, Feb. 24, 1976, Synthetic fibers and pile fabrics made therefrom; John Humphrey Wessells, 428/17; 156/72; 428/92, 373, 374, 397 [IMAGE AVAILABLE]

US PAT NO: 3,940,522 [IMAGE AVAILABLE]

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DETDESC:

DETD(43)

The pile fabric of this invention has improved appearance and **mechanical** properties in view of the unique pile structure, specifically, the unique combination of grass-like **fibers** and **crimped** and/or crimpable fibers of the required denier and percentages, described above. As should be apparent from the above description, the precise form of the fiber in the pile structure of course is dependent upon the pile fabric preparation. For example, when the pile fabric is produced by tufting, the pile will consist of tufts of the fibers. Similarly, when pile loops are cut, the pile fibers, if originally in continuous filament form, are now of staple length. Further, the latent crimpability, if any, will be developed. If some or all of the grass-like fibers have different shrinkage characteristics than other fibers in the pile and/or if latent crimp is developed in crimpable fibers, two or more different levels of pile fiber heights may be present. For example, when fibers are used which are already highly crimped when they are combined with the grass-like fibers, little or no additional crimp development is required during finishing of the fabric. When the pile tufts are cut and the fabric is finished, the height of the crimped filaments may be the same or slightly different from that of the grass-like fibers. On the other hand, when fibers having little visible crimp but having a latent potential for developing crimp, are combined with grass-like fibers, made into pile fabric, and crimp is developed, the crimpable fibers shorten (due mainly to crimp development), and at the same time press laterally against neighboring filaments, to form a

distinctly lower pile layer. Although desirable, pile levels are not considered essential herein as long as the **crimped fibers** as described above, are present. Whether due to developed crimp and/or latent crimp in the yarn, the fibers in the pile structure should be crimped; generally at least about 5 crimps per **inch** (preferably 10-20 crimps per **inch**) with an amplitude of at least 5 fiber diameters is suitable. These **crimped fibers** support the grass-like fibers, contribute a major portion of the resilience of the pile surface and improve the **mechanical** and frictional properties thereof.

50. 3,671,619, Jun. 20, 1972, CRIMP RESERVATION PROCESS; Warren E. Fitzgerald, et al., 264/168; 28/281; 264/172.11, 172.16, 182, 342RE, 346; 428/370, 373 [IMAGE AVAILABLE]

US PAT NO: 3,671,619 [IMAGE AVAILABLE]

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DETDESC:

DETD(18)

A composite fiber was produced by cospinning in a 1:1 ratio a polymer of acrylonitrile-vinyl acetate (AN-VA), 94:6 ratio, and a polymer of acrylonitrile-vinyl acetate-styrene (AN-VA-S), 90:6:4 ratio, using a plate mixer standard spinnerette combination of the type disclosed in U.S. Pat. No. 3,295,552 by Powell et al. The fiber was piddled into a container which was placed in a high pressure (35 psig) steam chamber to develop crimp. The crimp level developed was about 25 crimps per extended **inch** of **fiber**. The **crimped fiber** was stretched 1.

3.times. in a boiling water bath and cooled at this elongation. The fiber was then given a light **mechanical** crimp via a stuffing box at room temperature to aid in further processing of the fiber. The fiber was cut to 2 1/2 **inches** staple and processed into yarns by the cotton yarn system. The yarn when placed in boiling water bulked into a much larger diameter yarn as shown by FIG. 2 and FIG. 3, which are reproductions of photomicrographs, at a magnification of 135.times., of the yarn before and after placing in boiling water to redevelop crimp amplitude.

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21. 5,062,874, Nov. 5, 1991, Filter sealing apparatus; Pierre Legare, et al., 55/337, 456, 502; 96/134; 239/524; 277/316, 650, 918 [IMAGE AVAILABLE]

US PAT NO: 5,062,874 [IMAGE AVAILABLE]

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DETDESC:

DETD(13)

During the canister's assembly process, the sealant deflector 25 is dropped into place inside the top 12. The **pleated** paper particulate **filter** 30 is then inserted inside the top 12 so that the sealant deflector 25 is sandwiched between the top 12. . . the particulate filter element 30. The top 12 is then mated to the bottom 14. The arms 60 and the **spacers** 68 (if any) cause the substrate 54 and vane assembly 50 to be approximately centered with respect to the inlet. . .

25. 4,853,005, Aug. 1, 1989, Electrically stimulated filter method and apparatus; Rajan A. Jaisinghani, et al., 96/60, 67 [IMAGE AVAILABLE]

US PAT NO: 4,853,005 [IMAGE AVAILABLE]

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DETDESC:

DETD(5)

The **pleated** or convoluted **filter** medium 26 utilizes insulative plastic comb-like **spacer** members to maintain the pleat spacing and also to maintain an air gap between the filter medium 26 and each of the electrodes 27 and 28. More specifically, each **spacer** member includes a base portion 29 from which a multiplicity of teeth 30 project in parallel spaced relation. The base. . . no meaningful interference with air flow through the plate is produced. The teeth 30 project into respective troughs of the **pleated filter** medium 26 to thereby maintain the spacing between adjacent pleats. Since the teeth project from both electrodes into the pleats, . . . pleating is maintained integral from both sides of the filter medium. More importantly, a key function provided by the insulative **spacers** 29, 30, is the provision of air gaps 31 and 32. Air gap 31 is disposed between the grounded perforated. . .

DETDESC:

DETD(8)

The . . . the filter medium and the electrode). This spacing is maintained, in the preferred embodiment, by the comb-like structure of the **spacers** including base 29 and the tapered teeth 30. More particularly, the teeth 30 are closer together at their root ends than at their tip ends so that the **pleats** of the **filter** medium 26 can be inserted only to a limited depth between the teeth 30. This, plus the depth of the. . .

CLAIMS:

21. . . . peaks, edge portions of said sheet-like member being fixedly secured to said portions of said filter housing; wherein said first **spacer**, member comprises a first plurality of electrically insulative comb-like members having a base portion secured to said first electrode means. . . . base member and into respective troughs of said filter means to maintain said pleats in an open state; wherein said second **spacer** member comprises a second plurality of electrically insulative comb-like members having a base portion secured to said second electrode means. . . . in said filter means to maintain the pleats in an open state; and wherein the teeth of said first and second **spacer** members are tapered from root ends thereof to tip ends thereof whereby the **pleats** of said **filter** means can be inserted only to a limited depth between the teeth of said first and second **spacer** members, for establishing the length of said first and second air gaps.

28. 4,795,481, Jan. 3, 1989, Air filter with high dust-holding capacity; Jerry R. Ellis, 55/500, 521 [IMAGE AVAILABLE]

US PAT NO: 4,795,481 [IMAGE AVAILABLE]

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ABSTRACT:

An air **filter** of the accordion-**pleated** type with successive media pleats providing substantially parallel walls held in spaced relation by corrugated spaces and sealed within a square or rectangular frame. The **spacers** which separate the media in the upstream direction are of higher amplitude than the **spacers** separating the media walls on the downstream side. The upstream **spacers** are preferably about 2 to 21/2 times greater in amplitude than the downstream **spacers**. The filters are particularly advantageous in applications where the loading or dust collection rate is accelerated and the final pressure. . . .

SUMMARY:

BSUM(2)

The . . . in zig-zag or accordion fashion to provide a succession of substantially parallel media walls held in spaced relation by corrugated **spacers**. More specifically, the invention relates to a **pleated** media air **filter** mounted in a square or rectangular frame for use in high dust loading applications.

DETDESC:

DETD(9)

This, . . . to 21/2:1. An example of dimensions for a successfully constructed and tested filter pack having these attributes is: large amplitude **spacers** 0.180"; wide pleat knuckles formed using 0.190" wide pleating bar; narrow amplitude **spacers** 0.080"; narrow pleat knuckles formed using 0.060" wide **pleating** bar; **filter** pack 221/2" high, 221/2" wide, 101/2" deep.

-1- (WPAT)

ACCESSION NUMBER

XRPX

TITLE

DERWENT CLASSES

PATENT ASSIGNEE

INVENTORS

NUMBER OF PATENTS

NUMBER OF COUNTRIES

PATENT FAMILY

LANGUAGE

DESIGNATED STATE

CITATIONS

PRIORITY

APPLICATION DETAILS

FILING DETAILS

INT'L. PATENT CLASS.

ABSTRACT

91-165459/23

N91-126874

Mfg. folded thermoplastic filter element -
pleats transported web transversely to
longitudinal sense before stress-free shaping
of embossed portions

P72

(ASFA-) ASF AIR SYSTEM FILTER AG; (SEIL/)

SEILER H; (SEIL) SEIKO KOKI KK

SEILER H

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EP-429805-A 91.06.05 (9123)

CA2030667-A 91.05.28 (9132) E

JP03181305-A 91.08.07 (9138)

US5064598-A 91.11.12 (9148) E

CH-680910-A 92.12.15 (9304)

B01D-027/06

EP-429805-A3 92.02.12 (9323)

EP-429805-B1 94.12.21 (9504) 17p G

B29C-053/84

DE59008081-G 95.02.02 (9510)

B29C-053/84

ES2066083-T3 95.03.01 (9515)

B29C-053/84

E; G

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EP-316512 FR1532034 GB2146573 GB2207081

US3531920 US3570066 US4607770

90.08.16 90CH-002665 89.11.27 89CH-004237

90.10.08 90EP-119290 90.11.20 90US-615904

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B01D-046/52 B29C-053/22 B29C-053/24

B29C-053/84 B29C-061/02 B29L-031/14

B31D-005/00

(EP-429805)

The folded thermoplastic filter element for
mounting between inlet and outlet is mfd.
such that the folds open to the outlet side
are held apart by oblong, embossed portions
(15) formed in the material. The material web
forming the element is transported in its
longitudinal direction is first pleated in
the transverse direction for the amount
necessary to form the embossed portions.

The latter are produced by stress-free
permanent shaping, with the material heated
to above shaping and below shrinkage temp.
between jaws. Then it is cooled below the
shaping temp. The linear folds are formed by
jaws heated to between shaping temp. and
melting point until all unevenness is
smoothed out and then cooled again.

IMAGE FILENAME

ADVANTAGE - Improved filtering effect
and stability. (13pp Dwg.No.2/8)
WPB3J031.GIF

SS 2?